THE QUARTERLY MAGAZINE OF THE NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY
VOL. 9/NO. 2 FALL 1970

Terra

A Message from the Editor

The face that you see on the cover of your old familiar magazine is new. The name TERRA is meant to convey to you an interest in all things about and of this earth, an expanded horizon at The Natural History Museum of Los Angeles County, and a new and more varied outlook on this magazine. You will note that the name of the Museum has subtly changed, from The Los Angeles County Museum of Natural History, to The Natural History Museum of Los Angeles County. Many name changes were contemplated, both for the Museum and this magazine. For reasons of clarity and simplicity, and to eliminate confusion with sister institutions, these were chosen.

For a long time we at the Museum have been thinking of ways to make your membership in The Natural History Museum an enriching experience. When we put it all together we were surprised at the array of privileges only $12.50 will buy for you. It's your world! Why not own a share of it?

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African Mammals
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Birds
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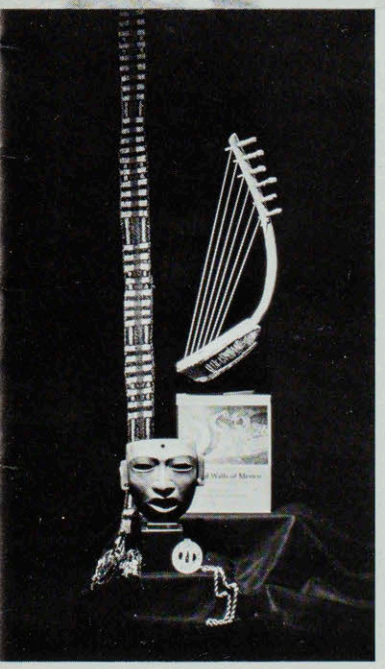
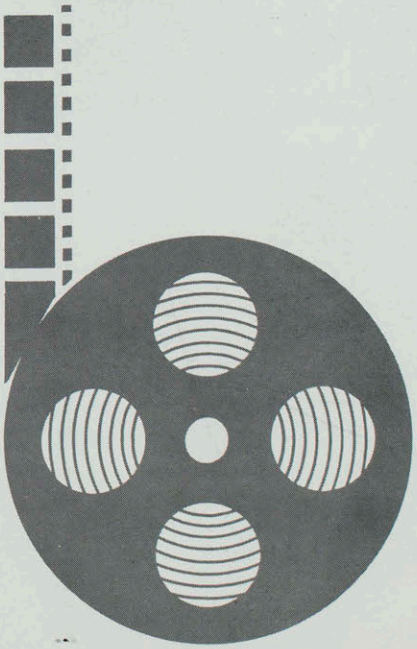
Your membership in the Natural History Museum will not only secure all these benefits for you, but also help build a bigger and better museum of world stature for our community and the entire West. Already, over 120,000 school children in more than 3000 school classes are guided through the Museum each year, and, in addition, the Museum hosts more than 1,000,000 visitors annually. New halls are in preparation, new programs in support of the protection of our environment are being formulated. Why not join *now*, when such vital progress is underway? Please make out your check for $12.50 to Natural History Museum Alliance and mail to: Museum Alliance, 900 Exposition Boulevard, Los Angeles, Calif. 90007.





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The Quarterly magazine of
THE NATURAL
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contents

Mead Meets the Membership **4**

The Fabulous Coco-de-mer by Wm. A. Emboden Jr. **6**

The Movies by Jack Smith **14**

As I Remember Moviemaking by John Dewar **16**

The Aqualung Spider Birth to Death Under Water by Peter T. Furst **22**

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cover;
A male and female (left) Lodoicea as they appeared to Mr. Harrison in 1826. See story on Page 6.

Dr. Giles W. Mead, Ichthyologist and High Seas Ecologist, came to The Natural History Museum of Los Angeles County in June, 1970, as its new director. Prior to joining the Museum, he was on the faculty in Biology and Oceanography at Harvard, and was active as Research Oceanographer in Woods Hole Oceanographic Institution, the Smithsonian Tropical Research Institute in Panama, and elsewhere.

The giant flying fish from the South Eastern Pacific shown here was photographed aboard the research vessel, Anton Bruun in Cumberland Bay, Juan Fernandez Islands, off Central Chile. (Robinson Crusoe's islands).

MEAD MEETS THE MEMBERSHIP

Unfortunately we museum buffs came along too late to catch much of the excitement. We missed the cabinets of curiosities assembled by nobility and the wealthy of the fifteenth and sixteenth centuries; the excitement of the returning New England sea captain with his chest of exotic treasures; and the colonial Englishman far from home to whom the establishment of his provincial museum was second only to that of his cricket club. We missed the flurry of the early great national exploring expeditions and the founding of the national museums that served as depositories for the collections that these expeditions returned.

We have had our share of more recent fun. Many of you have been associated with this Museum for many years and have helped it grow from a rather amorphous pile of objects and objectives into a true and fine Museum. I, too, consider myself fortunate; for I have been able to watch the explosive growth and conceptual change of museums that has occurred during the last two decades from excellent vantage points: my Bureau of Fisheries laboratory in the Smithsonian Institution in Washington; and as a curator in the greatest of the university museums, the Museum of Comparative Zoology at Harvard. Apparently my luck has not yet run out, for you have invited me to share in the future growth and development of the finest natural history museum in the west.

I would like to be able to tell you here what I think the Los Angeles County Museum of Natural History should be fifteen years from now and to outline the route toward that objective. That I cannot do; for I do not yet know well enough the present and recent past of this Museum to be able to plan an intelligent future. But just as I must know you and the Museum better before I can intelligently plan, you should know of some of my thoughts, predilictions, and observations so that you can better suggest, advise and, I hope, criticize.

Most of the museum developments that I have seen during the past eighteen years have been good: the excellent combined educational and research functions in such fine places as the American Museum of Natural History in New York; the extension of the Smithsonian's activities on a broad front, such as the initiation, through their Smithsonian Tropical Research Institute, of studies of environmental effects of the proposed sea-level Panamanian canal; the increased involvement of natural history museum personnel in higher education; and the advent of museum exhibits to illustrate concepts as well as objects, to name but a few. And I am pleased to note the increased opportunity for active involvement by the public in museum activities — our reactivated La Brea dig is an excellent example.

Conversely, I find some recent trends disquieting. I am disturbed, for example, by suggestions being circulated with increasing frequency that most original material, together with its curatorial burden, be shifted to a central facility (in Washington, of course), and that peripheral museums such as ours should make do with material borrowed or of secondary importance and with replicas. Replicas are the antithesis of museum purposes and their extensive use an insult to the museum visitor. To take a replica as the original is equivalent to assuming that you have experienced the Grand Canyon by viewing a photograph of it. I am further disturbed by the attitude, not unknown in our own Los Angeles community, that a private holding is too good for our Museum — "let's give or bequeath it to the Smithsonian." The great museums of New York, Boston and Chicago could never have been built had that attitude then prevailed.

I am also concerned about the level of support that all of our museums of natural history can command. These are times of soaring costs: welfare, medical, educational, military and public works as well as the grocery bill; and increasingly often our cultural institutions wind up way down on the monetary priority list. Most of us these days are forced to squeeze each dollar 'til the eagle screams — and screaming eagles build few display cases.

Monetary crises throughout the country's museums have also encouraged the quick fix and the short cuts rather than long term solutions. For example, we see increasingly emphasis on display and mass education at the cost of, rather than in addition to, the collection-based research from which new concepts of importance can emerge. In other areas, exhibitions have been designed with emphasis not on education but on impact — impact especially on potential donors and image in the public eye — the prostitution of true museum purposes.

We are also witnessing the proliferation, in art and history as well as in science and under the misnomer of "museum", institutions that are essentially display shells. These are institutions specializing in the more visible and hence more easily fundable functions — display and education — while neglecting or ignoring the less apparent concerns of the true museum, i.e., a knowledgeable and active acquisition program; the careful maintenance of these acquisitions for posterity as well as for the present; and original scholarly research based on these assembled collections. These are institutions willing to take the cream but unwilling to feed the cow. As interesting as they often are, they are not museums in the true sense.

The Los Angeles County Museum of Natural History is neither the largest nor the best museum in the world. But it is conceptually a complete one encompassing as it does the full array of activities from acquisition to public education. If this were not true I am sure that many of us here, including me, would be elsewhere. As a complete and broad-based museum, apparent growth may at times appear to be slow. Simultaneous growth of the several parts: active acquisition and curatorial care, fundamental research, education and display, is bound to be apparently slower than the selective nurturing of any single activity.

As a newcomer I am immensely impressed by the activities of this Museum: the people queued up to wallow in the tar in our behalf at Rancho La Brea; the new, lovely and informative exhibit halls that are developing at unbelievable speed given the

continued on page 31

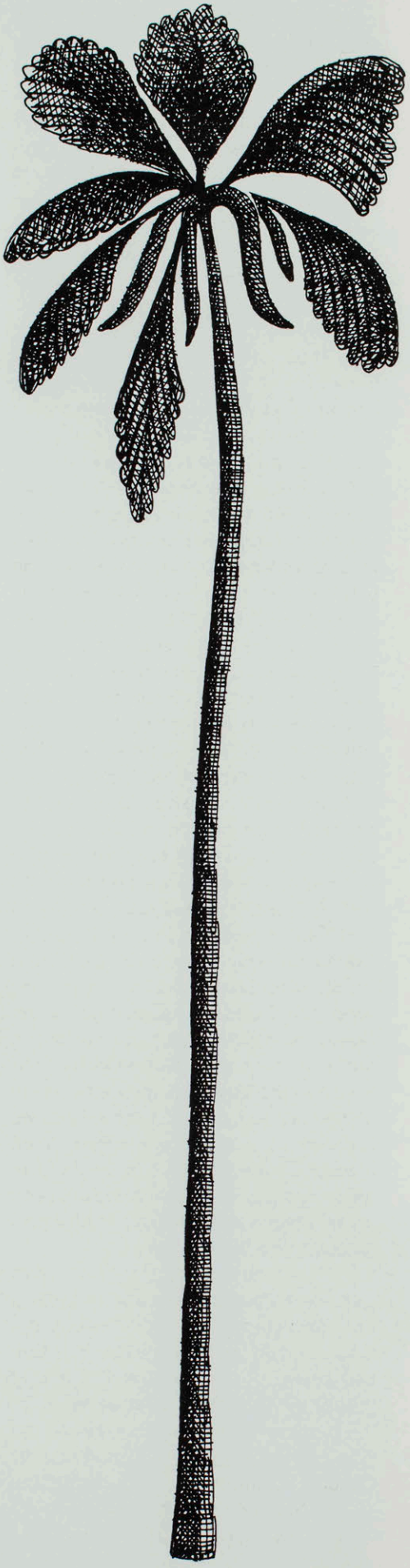
THE FABULOUS COCO-DE-MER

by **Dr. William A. Emboden Jr.**

"Near the Maldive Isles there
grows a tree
Rising majestically from the
depths of the sea,
Whose fruits formed into a
double chalice
Are an antidote to the
poisoner's malice."

The Lusiads X, 136

(*The Lusiads* constitute an epic poem in Portuguese written in 1572 by the poet Camoens who recounts the adventures of Portuguese voyagers. Author's translation.)



Near the island of Java, growing deep under the blue-green sea, there is a forest of trees whose leaves and branches rise above the waters. On placid days, these groves have been seen by Chinese and Malayan sailors. Inhabitants of the Indian Archipelago have carefully avoided the trees, for among the leaves and branches a monstrous bird or griffin makes its nest. Nightly, these terrible creatures sally forth to attack elephants, tigers and rhinoceroses which they tear apart with their beaks carrying pieces of flesh back to their nests. Furthermore, ships are attracted by the waves which surround this forest and many a mariner has fallen prey to this savage bird.

This is but one of several accounts to be found in the writings of Georg Eberhard Rumpf (Rumphius, 1627-1702) who recounts tales told to explain the origin of the double coconut, which is a "miracle of nature and, of all things living in the sea, the most rare." While Rumphius assures the reader that he does not believe all of the stories related to him concerning this nut, he cannot agree with Garcias ab Orta that it is a terrestrial production which had fallen into the sea. "It is surely," writes Rumphius, "a fruit, probably itself growing in the sea, whose tree has been hitherto concealed from the eye of man." Rumphius, supposing that these seeds were brought by prevailing currents from an area around the Maldive Islands, and relying on the poem by Camoens, named the plant *Cocus maldivicus*. Although the tree is not a coconut (the genus *Cocos*), nor is it from the Maldives, the names were later retained by Gmelin in his *Systema Naturae* of 1791 as a uniform Latin binomial. Certainly this is to be preferred to the Dutch *"Calappa Laut,"* under which appellation Rumphius presents his historical account.

It is not surprising that such tales and speculation should arise regarding the coco-de-mer, for these seeds are bizarre, often more than a foot in length and breadth, and possessed of a form that is most closely approximated by the pelvis of a woman of ample proportions. It was this observation which led Philbert Commerson, a crewmember on the historic voyage of Bougainville in the mid 18th century, to liken the form of this largest of seeds to that of Laodice, the most beautiful daughter of King Priam. Commerson, in a manuscript on his voyage mentions these nuts for the first time under the latinized name of this Trojan beauty, *Lodoicea,* an epithet later adopted by J. J. H. Labillardiere in his 1801 account *Sur le Cocotier des Maldives.* The similarity between the form of this seed and that of the female pelvis is so obvious that it is not surprising to find that these nuts were an object of veneration by members of certain island cults. One of these "miracles of nature" was included in a recent volume on the history of erotic art.

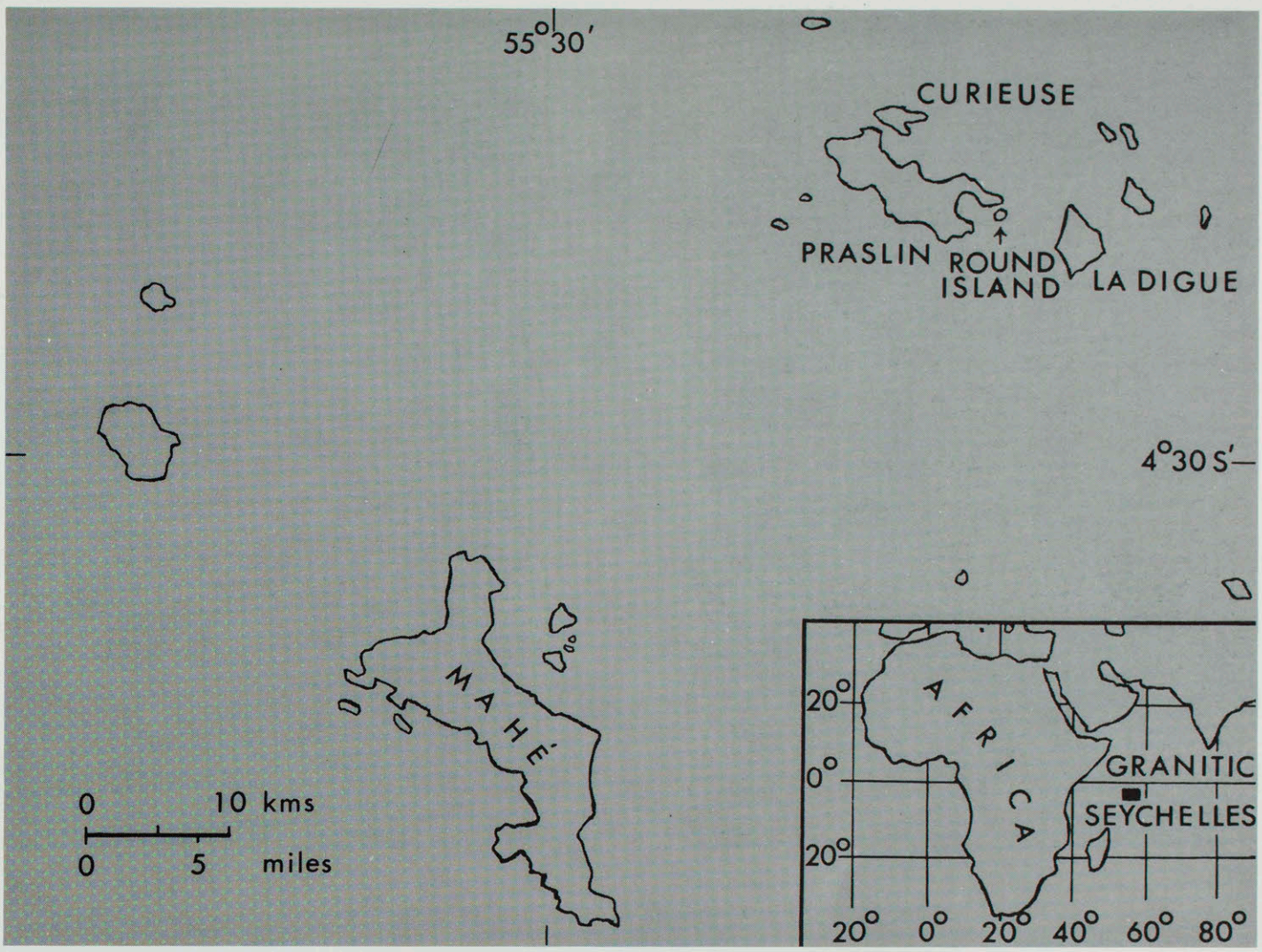
Historical records indicate that these nuts were collected on the shores of the Indian Ocean since the Middle Ages and were known in western Europe by the Early 16th century. There was controversy for a time as to whether the body was animal, mineral or vegetable. Charles de L'Ecluse (Clusius) in his 1601 volume on the history of rare plants (*Rariorum Plantarum* Historica) wrote of the coco-de-mer as *nux medica,* or medicinal nut. It was for its supposed magico-medicinal properties that this seed was so esteemed. On the Maldives and in China the hard corneous residue within the nut was considered to be unexcelled in healing all ills and as an antidote to poisons. Among diseases which were supposedly remedied by *nux medica* were: "the flux, epilepsy, apoplexy, colic, paralysis, and nervous infirmities." As an antidote it was said to be comparable only to bezoar stone (the latter being concretions from the alimentary tract of certain ruminants). The shell was made into goblets for kings of the East and West; after removing the top, the shell was covered with gold and diamonds. If any of the ivory-like layer remained in the interior, it was removed and mixed with coral, ebony, and stag's horn to form what was considered to be the most potent of medicines and a powerful aphrodisiac. In the East Indies, any man found in possession of a *Lodoicea* nut would have had a hand cut off, for these were the exclusive property of potentates. Tradition has it that any liquid drunk from a coco-de-mer goblet would be free of poison, thus putting it on a plane with unicorn horn as an antitoxin. Since regicide by poison was common, every king desired one of these cups. It is reported by Hooker (1827) that "some kings have been so greedy as to have given a loaded ship for a single nut." In 1759, it was not uncommon to see these nuts sold for 400 pounds sterling ($2,000) according to A. M. Rochon in his *Voyage to Madagascar* (1791). Rudolph II of Germany offered 4,000 florins ($2,000) for one of these which was in the possession of the heirs of the Dutch Admiral, Wolfert Hermanssen. The Sultan of Bantam had rewarded Hermanssen with a coco-de-mer seed for saving his besieged capitol from the Portuguese in 1602.

The stories of Clusius and Rumphius about griffins and disappearing trees were hardly conducive to exploration. It was not until 1640 when the herbal of Parkinson appeared, under the title *Theatrum Botanicum,* that the real impetus for exploration was given. Writing of *Lodoicea* under the Latin *Coccus de Maldiva,* Parkinson discounts the contention of earlier writers that the "cokar nut," or "maldiva," is a product of the sea. He believed the cokar nut to be related to the coconut which lines the shores of many islands and was already popular in Europe. Recent anatomical investigation discounts this speculation and suggests that the "double coconut" is not a coconut, but is related to the Borassus palms. "If sought for by stout and not timerous persons, by religious not superstitious as most of the Indians are, and by judicious industrious men, not weakelings and fooles, the tree that beareth these fruits would be found. . . ." Parkinson extends this hypothesis by adding that he believes one of these seeds, if planted in the earth, would probably germinate and grow into a palm not unlike the coconut. Such a tree ". . . would prove no less gainefull then (sic.) memorable to all posterity." He still believed that the contents of the nut were efficacious against all diseases and particularly effective against the pains of childbirth.

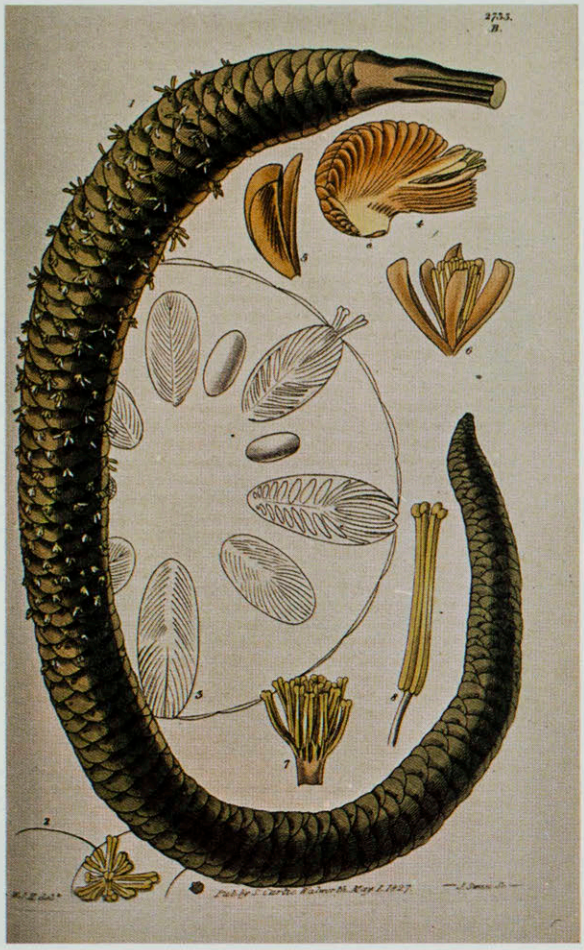
On January 19, 1609 a British East India Ship, the *Ascension,* commanded by Alexander Sharpeigh landed on a group of islands taken to be the Almi-

A mature, fruiting female *Lodoicea* growing in the Royal Botanic Gardens, Peradeniya, Ceylon. Photograph courtesy of Natural History Museum of Los Angeles County Docent, Mrs. Arlene Young.

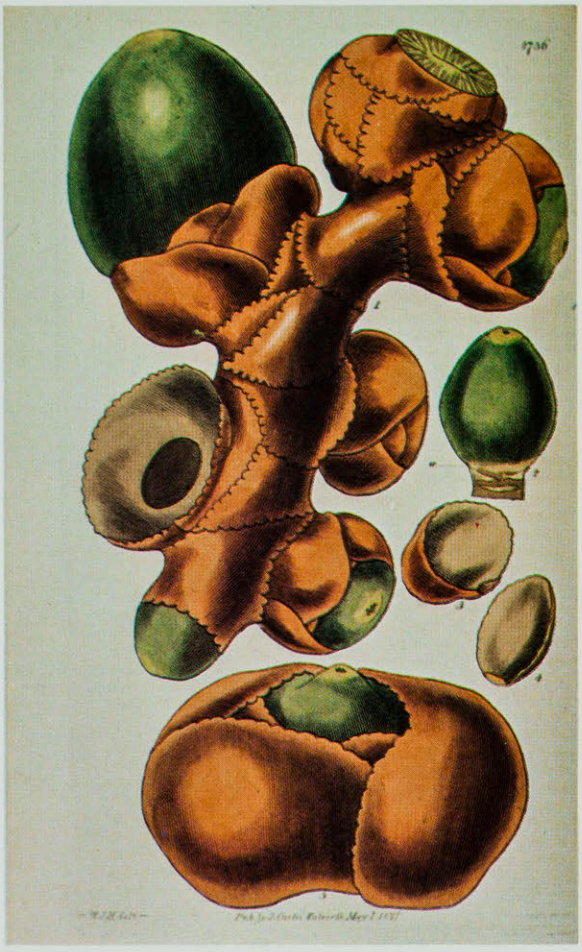
World's largest seed, *Lodoicea*. Museum specimen.



Map of the Seychelles Islands showing their proximity to Africa.

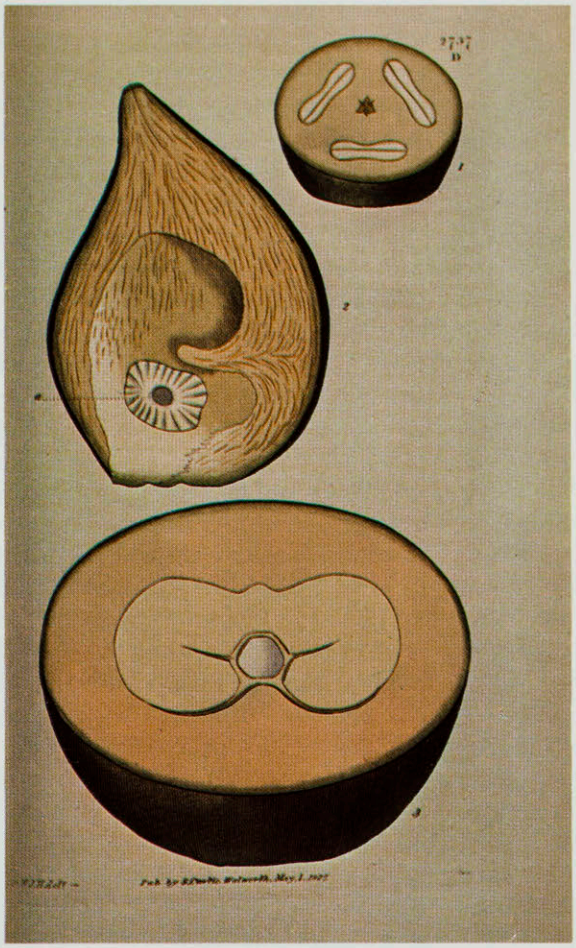


The male infloresence of the coco-de-mer showing details of flower structure.



Female flowers of the coco-de-mer.

Stamp from the Seychelles indicating interest in the coco-de-mer.



Longitudinal and cross sections of the fruit of *Lodoicea*.

Fruit of coco-de-mer (reduced greatly); a trilobed seed from such a fruit; a germinating nut showing the peculiar mode of germination described in this paper.

rantes of old charts. Almost three hundred years later the records of this expedition were reviewed by Admiral Sir William Wharton who found them to be identical with the Seychelles Islands (see accompanying map). This first landing was more an episode than an exploration. It was not until November of 1742 that an effective deliberate landing took place. Under the direction of Mauritian governor Francois Mahe de la Bourdonnais, Lazare Picault and Jean Grossin landed their ships on the southwest coast of the largest of these islands. Two years later Picault returned to take formal possession of this archipelago naming the largest island Mahe and two others, Isle de la Palme and Isle Rouge. The latter two are thought to be the islands which now bear the names Praslin and Curieuse, respectively. Although there was a subsequent landing by Mauritian ships in 1756, it was not until 1768 that the islands' interiors were penetrated. In 1768 Mauritius was ruled by the French Crown and the intendant of Mauritius, Pierre Poivre, initiated expeditions led by Chevalier Marion du Fresne Commander of *La Digue* and *La Curieuse.* Two islands were given the name of his ships and a third was named Praslin, after Gabriel de Choiseul, Duc de Praslin. Exploration into the interior of Praslin was difficult and limited, but it solved a mystery that was centuries old — the source of the fabulous coco-de-mer, until this time one of the wonders of the world.

There is no disputing the date of the discovery of the fabled coco-de-mer, however, a synopsis of the Palms of the Seychelles by L. H. Bailey (published in *Gentes Herbarum,* 1942) gives 1743 as the date for the discovery of *Lodoicea,* a year drawn from Hooker's 1827 presentation. There is no indication of an expedition in that year, nor is there any record of the coco-de-mer being found. Captain Duchemin of *La Digue* sent a whole cargo of the nuts to India where they were sold for a small fortune, and Barre, an engineer with the voyage of 1768, sent 30 of the nuts to Commander Poivre. Poivre's enthusiasm was great, and greater still when a French Astronomer Alexis Rochon sent a living tree to the Commander. "Send an entire shipload," wrote Poivre, "enough to plant the whole of our Tonneliers Island and the surroundings of our principal ports." Unfortunately, the plants are difficult to germinate and can be grown in only a few places around the world. Poivre's attempt, like that of so many others, was abortive. Injudicious French and British sailors took advantage of the discovery and raided Praslin and Curieuse Islands. World markets were provided with an abundance of the nut and the astronomical prices soon dropped. So much attention was given to the groves of coco-de-mer that visiting scientists gave almost no attention to recording the flora and fauna of these islands in their primeval state. Round Island, just off the coast of Praslin, was reported at this time to have some of these palms, but today only the basal sockets remain anchored in the ground.

At present, less than a hundred of the thousands of trees and seeds shipped throughout the world remain in domestication, and few of these have attained flowering size. Specimens may be seen in Mahé, Jamaica, Trinidad, Ceylon, British Guiana, Kew Gardens, Coconut Grove, Florida, and in the green houses of Duke University. The latter specimen sprouted from a viable seed collected at Mahé by Museum Associate, Dr. Sylvia A. Earle in December 1964.

Only Praslin and Curieuse can boast living forests of indigenous trees. These groves are far less dense than they were in the 18th century, and an understory of flowering shrubs and vines has replaced the numerous seedling palms that were present at an earlier date. In 1826, Mr. J. Harrison was in Praslin making observations and drawings of the coco-de-mer, and it is from these drawings that Mr. J. Swann made the engravings which accompany this text. The naturalist, Pierre Sonnerat, who was a member of the Royal Academy of Sciences of Paris, took a voyage to New Guinea and in the course of his travels visited Praslin. So impressed was Sonnerat, that he devoted the first ten pages of his book (Voyage a la Nouvelle Guinee, 1776) to the "cocotier-de-mer" and had several engraved plates accompanying the text. These plates, while attractive, have little botanical merit. Harrison's drawings give a more accurate picture of the habit and aspect of these peculiar palms. The sight must have been awe-inspiring, for he wrote to the renowned botanist W. J. Hooker, "To behold these growing in thousands close to each other, the sexes intermingled (my note: the plants are dioecious; i.e. there are male trees and female trees); — a numerous offspring starting up on all sides, sheltered by the parent plants; — the old ones fallen into the sear and yellow leaf, and going fast to decay, to make room for the young trees presents to the eye a picture so mild and pleasing, that it is difficult not to look upon them as animated objects, capable of enjoyment, and sensible of their condition." A poetic and inspring picture is drawn by Harrison, though anthropomorphic in sentiment. He was not the first, nor the last, person to be moved by what he saw on Praslin. Charles George Gordon was a British colonel sent to Mahe in 1881 to see if it could be effectively fortified in case of another war with France. Gordon was a hero of Khartoum and a well-known military figure in England. Among the military maps and notes sent back to England was a letter from Praslin to the Director of the Gardens at Kew putting forth a most astonishing hypothesis: "As we generally believe that there was a tree of Knowledge of Good and Evil, and a tree of life, actual trees set aside for a time to be imbued with mystic powers, there is no reason why these trees should not exist now . . . relegated back to ordinary trees. . . ." Imagine the sight which must have provoked such a man to visions of a rediscovered Eden. When Gordon designed the coat of arms for the Seychelles, he included a giant tortoise and a *Lodoicea* palm. This emblem remains in use today.

Lodoicea palms stand stiffly erect, not swaying like the coconut palms which line the island shore, towering over a hundred feet in the air and bearing fronds twenty feet long and almost as wide. Light filters through the leaves onto a forest floor of damp humus and flowering *bois rouge (Dillenia ferruginea).* Sounds heard in these forests are few, the gurgling of water from hidden springs and the silver notes of the rare Praslin black parrot (*Coracopis nigra*) contrasting

with the cooing murmur of the beautiful fruit pigeons *(Alectroenas pulcherrima)*. The largest stand of the palm is on Praslin in an interior valley known as the *Vallee de Mai* or May Valley. Formerly owned by M. France Jumeau, it was purchased by the Seychelles government to protect it from the ravages of collectors and builders.

Stories concerning the life history of this palm have been greatly exaggerated. However a reliable account can be drawn from the observations of J. F. G. Lionnet who is at this time Director of the Department of Agriculture of the Seychelles Islands. Writing in the journal *Principes* (volume 9, 1965) Mr. Lionnet describes the present day state of the May Valley and its 4,000 palms. Contrary to earlier reports that 100 years is required for a plant to attain sexual maturity, we are assured that a palm may begin bearing after twenty-five years and continue to do so for over 800 years, according to the dating of some extant trees. While the female buds are unobtrusive, the male palm produces a catkin three to four feet long and four inches in breadth on which are born thousands of small yellow male flowers. From the time the female flowers are fertilized until mature fruit is produced seven years will have elapsed. When the fruit matures, a single tree may support a fruiting branch weighing more than 400 pounds. Individual fruits weighing over 100 pounds have been recorded, and the seed of such fruits may weigh 40 or 50 pounds. Trees get only one new frond each year and the leaf, together with three bracts must support the massive cluster of fruit.

The phenomenon of germination is every bit as strange as the other attributes of the coco-de-mer. When the fruit falls to the ground, the husk splits revealing a nut of two or sometimes three lobes. Conditions of moisture, heat and a rich humus substrate are required for the seed to resume active growth. After many unsuccessful attempts were made to germinate the seed away from its native environment, Mr. Barclay and Mr. Hooker of the Royal Botanical Gardens at Kew in 1827 received a number of germinated nuts from Praslin which they planted in the "stove houses" at the Gardens. Prior to this date no *Lodoicea* were grown at Kew. From this group, or the subsequent introduction of a seedling, a mature plant was realized in full fruit in 1854. The Kew conservatory filled with Londoners anxious to see one of the most famed and bizarre plants of the world. When the seeds were finally sold at auction, they brought ten pounds each or approximately $50.00 per seed — a handsome sum in Victorian England.

A seed fallen to the surface of the warm, moist humus of the forest floor will in a few months exhibit a pale yellow shoot emerging from the septum between the lobes. This rope-like projection moves into the soft earth where it grows a distance, parallel to the soil surface and away from the nut. A distance of twelve feet may be realized before this sort of growth is terminated and a true shoot projects upward through the soil surface and a root grows below. One would not associate the seedling and the seed because of the distance, but for four years the small plant will remain attached to its source of nutrition. Finally the small palm is photosynthetic, the reserves of the seed are depleted, and the "rope" rots away. This mechanism insures that the progeny need not grown in immediate proximity to the parental tree. As the palm matures, a basin or socket develops 18 inches under the ground and may achieve a diameter of three feet. These hard sockets are perforated with holes through which the roots pass. Speculation on the function of this socket centers on its usefulness as an anchor, for in fierce gales the coco-de-mer stands stiffly erect without swaying. In spite of the moisture and fungi, this hard socket may persist for 60 years beyond the life of a tree. Round Island bears the sockets of numerous *Lodoicea* palms which have long since disappeared.

A visitor to Praslin today may tour the protected groves reflecting on the wonder that this sight must have inspired in such men as Sonnerat, Harrison and Gordon. Perhaps in the course of his visit he may have the pleasure of tasting a preserve made from the jelly-like endosperm of unripe *Lodoicea* nuts — a delicacy which the Queen of Portugal prized so highly that she ordered a ship of these fruits every year. Now that the government protects the palm forest, it seems likely that the seed which is comparable in beauty to the daughter of Priam, and which mesmerized mankind since the Middle Ages will be around to challenge the imagination of other generations.

Dr. William A. Emboden Jr. is research Associate in Botany at The Natural History Museum of Los Angeles County and Professor of Biology, San Fernando Valley State College. His articles for this magazine on Narcotic Plants have been expanded and will be published by The MacMillan Company.

I wish to thank the staff of the Huntington Library for their generosity in making books and reproductions available to me. Bibliographical snarls were neatly untangled by Mr. James Davis of the UCLA College Library. Mr. Guy Lionnet, Director of Agriculture of the Seychelles is to be thanked for correspondence and his accounts of the coco-de-mer as it exists today.

THE MOVIES

by **Jack Smith**

I went round to the back of the Museum and into a door marked *Shipping Entrance,* as I had been instructed. A guard stopped me, as expected. I gave the password. He signed me in and told me how to reach the offices of the man I was to see.

I took an elevator to the third floor and walked down the long cluttered corridor. I stole quick glances through open doors into beautifully disordered rooms in which, I imagined, the secrets of the ages were being quietly pried from their shells like pearls.

There was no sound but the *shuff* of my own shoes. I felt like the protagonist in the introductory sequence of a new Hitchcock. In a moment the titles would appear:

JACK SMITH
in
PHANTASMAGORIA
Also starring Russell Belcus
and John Dewar.
With Lon Chaney, Charlie Chaplin,
Marie Dressler and Mary Pickford.

I found Belous looking abstracted but cheerful, precisely as I should have wanted a curator of history to look. We shook hands and he led me back along the corridor and down to the hall where "The Movies" was in preparation.

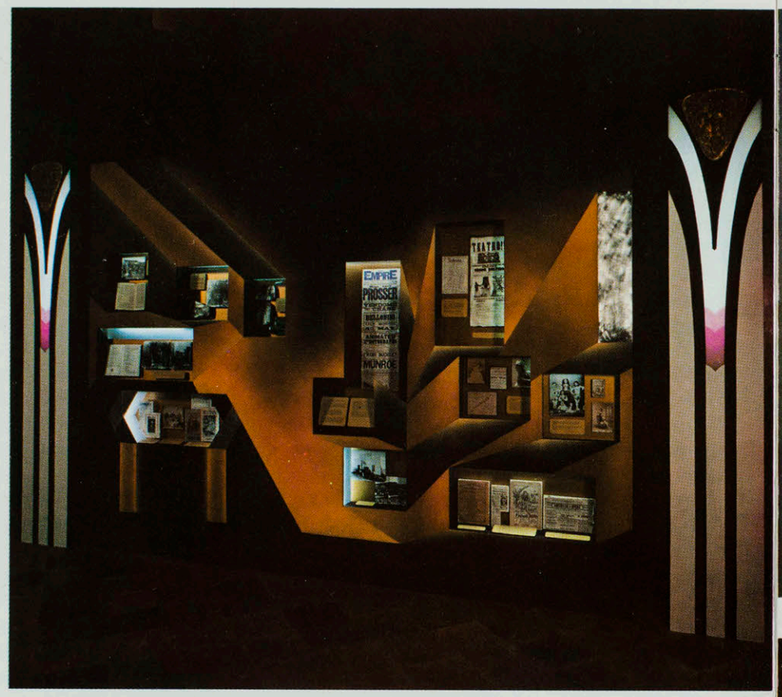
We were no more than in the door when I saw Lon Chaney. He was in rags; on his knees, legless, supporting himself with sawed-off crutches. Lon Chaney in "The Penalty," 1920. He had worked for hours, in torture, with his legs doubled back out of the camera's eye.

"Have you really got his legs folded back?" asked Belous. "Of course," said a man who seemed to be in charge.

"John Dewar," said Belous. "He's the director." Director? I couldn't place the name. "Intolerance"? "Our Dancing Daughters"? Of course not. He wasn't that old.

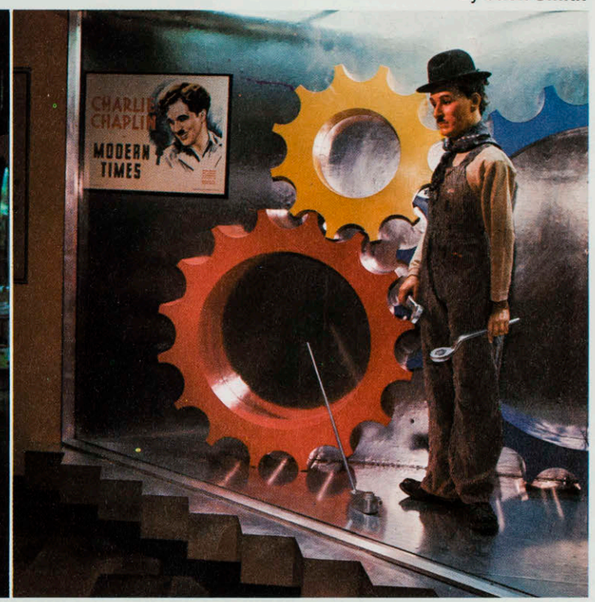
Lon Chaney's make-up kit was at his knees, with half a dozen blind eyes staring blindly up. How I remembered those blind eyes in that tortured face! Lon had all the strikes against him. Blind, crippled, defaced and mad.

He was my father's idol. I grew up on Chaney's misfortunes. Nothing in my boyhood scared me as much as when he got hold of Mary Philbin on the roof of the Opera, his red cape



Gallery wall of photographs, programs, and playbills relating to early films and the theatre in Los Angeles.

Mary Pickford's curls.



Charlie Chaplin in "Modern Times." Original costume and props.

Lon Chaney costume worn in "The Penalty" (1920).

flying like the colors of Hell. It was, I believe, a primitive use of color in the movies, that cape painted red on the black and white film.

In the end Chaney turned out good, because that's what he was. He was Good taunted and disfigured by Evil, and he triumphed, in the best Christian tradition, by paying the ultimate Penalty.

We are all students of the movies in America. Lon Chaney's blind glass eye could stir in me the emotion that a rare scarab might stir in an Egyptologist. We are all experts in this field.

Then what was this? A pair of very small black patent leather dancing shoes fastened to the wall, and hanging from them a pair of horn-rimmed glassless eyeglasses.

"Are those Shirley Temple's shoes?" I asked.

"Yes," said John Dewar. "The glasses are Harold Lloyd's."

"I don't see the connection," said Belous.

"Neither do we," admitted Dewar.

Well, that's what I do with my glasses; put them down any old place. I imagine Harold Lloyd does too.

We stood in front of the big blowup of the battle scene from "Birth of a Nation." It was stunning, the quality of the print, the dynamic beauty of the composition, of the ragged squad of rebels fighting from behind a barricade of logs and sandbags; all Griffith's greatness suggested in a single frame.

"I've always been surprised that Griffith would do that," Belous said.

"What's that?"

"They've got the wrong guns. Those guns weren't issued till '72. They opened up the West."

That's the trouble with historians. They don't understand Einstein's theory of time, also known as C. B. DeMille time.

"THE LOST WORLD"

It was a gaudy lobby ad. It brought back all the marvels of that landmark picture. "Seven years in production . . . See modern lovers clash with prehistoric monsters!"

I had seen "The Lost World" again recently on TV, and it held up very well. Bessie Love was wearing too much lipstick, and the movie would have been helped by sound. Remember Fay Wray's screams in "King Kong"? But the rest of it was quite plausible.

"That used to bother me," said Belous. "Putting people in with dinosaurs. But it's a great picture. I love it."

He was all right, after all.

I was fascinated by the Mutoscope and its titles, the peep-shows you could see like pages in the old riffle books we had on schoolgrounds. "The Jealous Model"; "How the Porto Rican Girls Entertain United States Soldiers"; "Making Love on the Beach at Long Branch."

Drop Nickel in Slot, read the little sign under the Mutoscopel,only *nickel* had been scratched out and *coin* written in. So they have been with us since the start, those contemporary phenomena, pornography and inflation.

We looked up at Charlie Chaplin, the *monkey wrenches useless in his* hands as he stands in front of the huge devouring gears of "Modern Times," man bewildered and shrunken by the machine.

And a few steps farther on there were Mary Pickford's blond curls hanging from a peg; shorn, the card said, for Miss Pickford's role as Coquette in 1929. Well, the whole country was shorn in 1929, wasn't it? It was the end of Mary's innocence and ours.

We left "The Movies" and went back into the Museum proper, where time is in its place.

I have only one complaint. The exhibition hall is not going to be big enough. It's going to be too popular, and the tombs of Hollywood's pharoahs are too rich in treasures.

In time I'd like to see "The Movies" moved out into the great hall with the dinosaurs. The dinosaurs could be covered with Naugahyde and John Dewar could recreate the scene where Bessie Love struggles in the maw of *Tyrannosaurus Rex* as Lewis Stone peppers the brute with futile pellets from his anachronistic popgun.

Now wait a minute, though. Did they *have* Naugahyde when Bessie Love was young?

Ah, the movies.

Jack Smith writes a column for the Los Angeles Times which is widely syndicated. Author of numerous magazine articles, this is Mr. Smith's first venture for Terra.

AS I REMEMBER MOVIE MAKING

by **John Dewar**

I suppose most curators work best when closely tied to their interests. I doubt if I had any more than the usual interest in the history of the movies and Hollywood. Perhaps a certain nostalgia for the past and, even more, the contagious excitement of younger people for a time that is "history" was an incentive. To anyone born here shortly after the turn of the century, Hollywood and the movies were a sort of paradox. It was here but somehow disassociated from what you saw at the Colonial on Saturday matinee.

Motoring on a Sunday, it was not infrequent to see, down a side street, that cluster of people and gold and silver reflectors which indicated a movie being made. I remember one day in Eagle Rock when we stopped the automobile and walked down the street to watch Charlie Chaplin make that mem-

orable scene from "The Preacher" where he, disguised as a member of the cloth, walks along with the local prelate, slips on a banana peel, falls and breaks a full pint in his hip pocket. This scene done again and again, used up an entire bunch of bananas.

I was, by sheer accident, brought a little closer in touch with the studios than most kids. My father, who as a young man had a successful career in Europe working for Bell, brought his family to Southern California. One day at Fifth and Spring Streets in Los Angeles, his horse was frightened by a car, pitching the buggy over and injuring my father. Whether this slowed him down or not, I don't know. He did act as president of the Cawston Ostrich Farm and later opened a millinery shop on Spring Street. A voyager in uncharted seas, he didn't reckon with women's fashions and suddenly found himself with a store full of huge hats and pounds of ostrich plumes when, overnight, the style changed. We had a large home in South Pasadena full of imported furniture from Belgium, and it occurred to him that an income could be supplemented by renting this to the movies. This was before the large property houses and actually proved quite lucrative, to the extent that he imported more material from Europe and had copies of paintings specially made for the trade. The studios made it clear they couldn't use a well-known recognizable painting, so he devised the neat trick of taking a famous period painting and altering it slightly. These were well done by capable artists and still must occasionally turn up on the market, to the utter consternation of dealers who are perhaps completely non-plussed by coming across the Duchess of Devonshire with rather peculiar modifications or additions. Be that as it may, I was always ready to help, for it meant letting the top down on the car, loading it up and driving off for the day. At that time, Los Feliz Boulevard was a long drive bordered by endless fields of cabbages or carnations with an occasional stand for selling produce. The studios, I don't even remember. I do remember, though, the large set for Douglas Fairbanks' "Robin Hood," but it didn't seem to have much connection with the picture. I do remember one other incident. My sisters were excited because the art director was supposedly bringing Elinor Glynn to the house to help pick out some furnishings. I was playing in the yard when a large car drove up, and I scooted around to the back door and peeked between the portieres. Sure enough she was there, seated cross-legged in a chair by the door, wrapped in her famous tiger-skin coat and smoking a cigarette in a long holder.

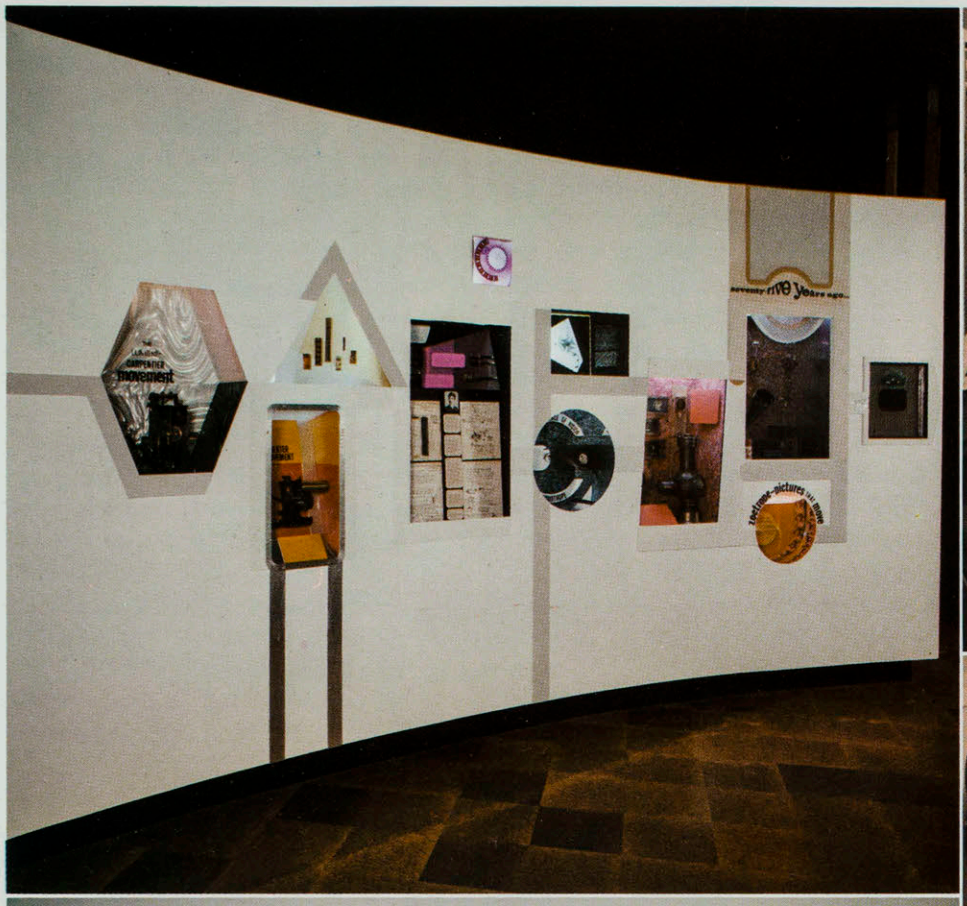
I suppose the thing that really kept natives of the area from seriously considering the movies as a career was the fact that you could often pick up jobs as extras. Surely there is nothing as tedious as this work, the standing around, the interminable waits, enough to deter the stout-hearted. This, plus the milieu of theatrical life, seems strange to those not born to the boards. I recall a friend I had in high school whose parents were in the theatre. I was perplexed by his gypsy life. I am sure that he had been in every state in the Union and lived in most cities. However, I believe that this is one of the very things that should be considered in the historical view of Hollywood and the growth of the studios. It did allow people in the business to have a more urbane and settled life. It has been said of Hollywood that it is really small-town America and there is probably a modicum of truth in that.

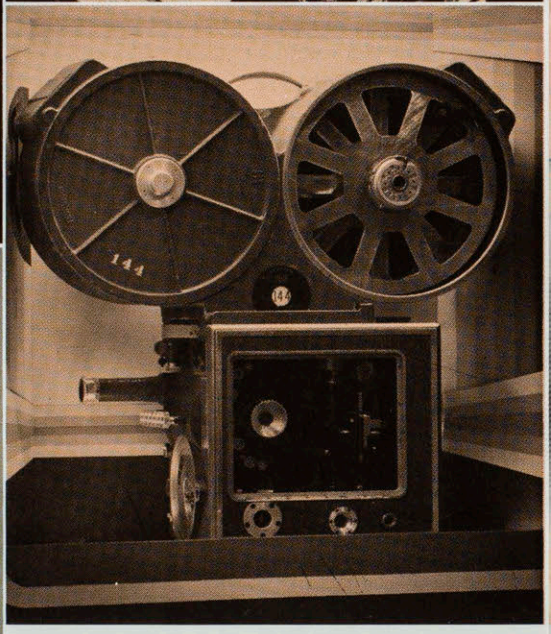
Perhaps there is some historical antipathy on the part of most people to the theatrical profession. One evening many years ago, a friend of mine, Mr. Ernest Sutton, was recounting some of his early experiences to me. While he was Mayor of South Pasadena, he heard that a group of movie people had been seen setting up work on the edge of the Arroyo in preparation to shooting a movie. He and the governing fathers of the town quickly assembled and marched down Mission Street and let them know, in no uncertain terms, that their likes were not welcome in the city. To this day, whenever I pass that spot on the edge of the Arroyo, looking still as it has since that day when Portolá supposedly lingered there, I wonder what might have happened if that group had remained to found a studio.

Of course, one too, sometimes saw some of the heartbreak of movieland — coming as it did in such unsuspected ways. When I was in high school, a doctor by the name of Booth and his family moved into the block. The oldest daughter, Edwina, was in the theatre and I was friends with a couple of the sons. If I remember correctly, they were descendants of Edwin Booth. Edwina was acting downtown in a play with some eminent American actress and had become friends with my mother. One afternoon, we drove her over to Hollywood to audition for a part in a picture. She won the role, a lead in "Trader Horn," the best seller of its day. In Africa, where they filmed, she contracted some disease and within a very short time was dead. It was a hard thing to believe, one so young, so beautifully blonde, a radiant and lovely person so full of promise, winning the Hollywood dream, only to be shattered.

Probably some of the pleasantest experiences that come from museum work are the people one meets and this was certainly true with the Movie Gallery. One day I had a telephone call from Mrs. Helen Clifton, who had read somewhere what we were doing. She had some albums of photographs which she would like to give to the Museum if we could use them. Her husband had been in the movies and these covered his career. I went out to visit Mrs. Clifton and found that her husband had been Elmer Clifton, well remembered as Phil Stoneman, Northern son, in D. W. Griffith's "Birth of a Nation." His career was closely allied with that of Griffith and later, as a producer, he made "Down to the Sea in Ships" — the finest movie on whaling ever made and introducing a thirteen-year-old girl by the name of Clara Bow. The photographic material was incredible and gave us fine original pictures for the gallery — many of which are undoubtedly unique. Such photos as D. W. Griffith directing Elmer Clifton and Dorothy Gish, with Richard Barthelmess standing by, conjure up an entire era of Hollywood's past.

John Dewar is Associate Curator of Western American Art, The Natural History Museum of Los Angeles County. He is the author of many published articles.



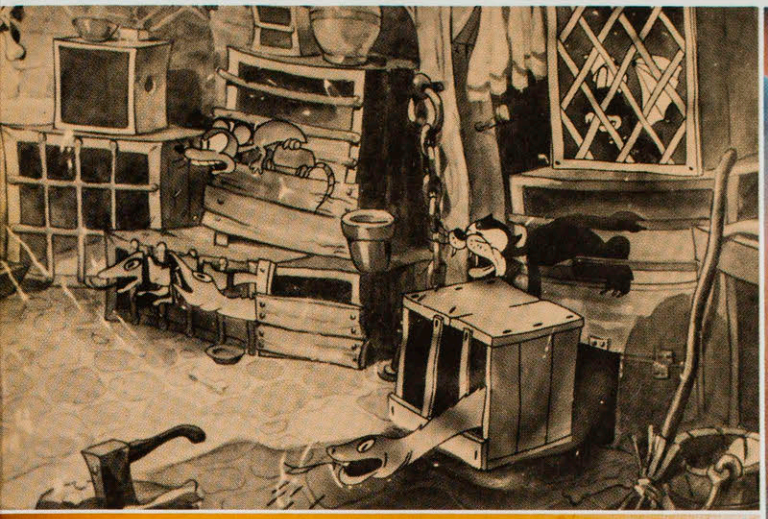


Gallery view. Panel shows the technological development of the motion picture from early optical toys and devices.

Gallery view showing display of early projectors, including an original Lumière camera and projector.

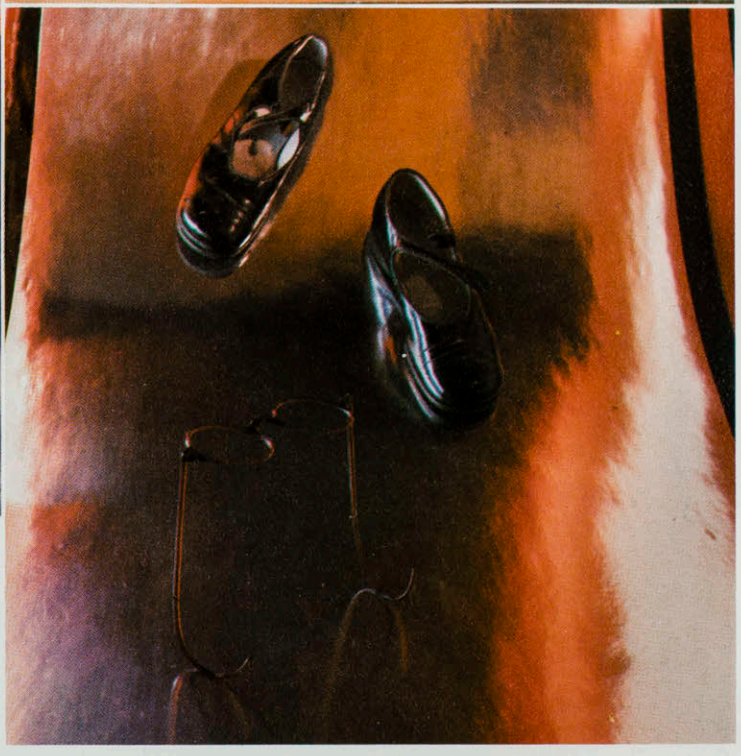
Vitaphone means of adding sound to movies

3 color camera made by Technicolor used from 1932 to the 1950's



A cel from
Disney's
"Babes in the Woods".

Fay Wray on the cover of
Cinema, a Romanian
film magazine.

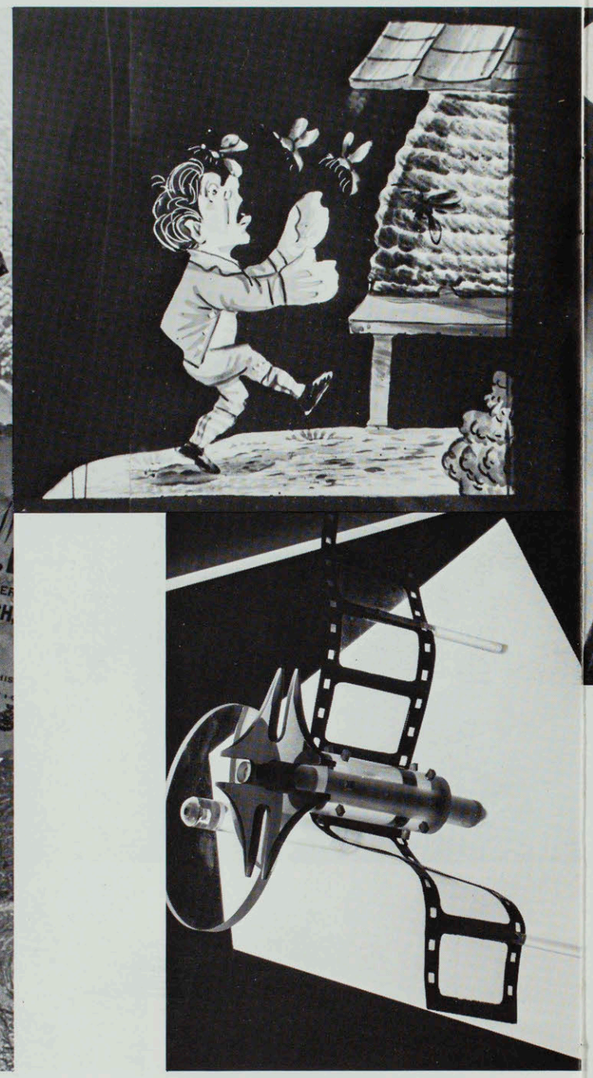


"The Lost World." Back-
ground sketch for
scenic artists, and
replica of fossil
dinosaur egg.

Shirley Temple's shoes
and Harold Lloyd's
glasses.

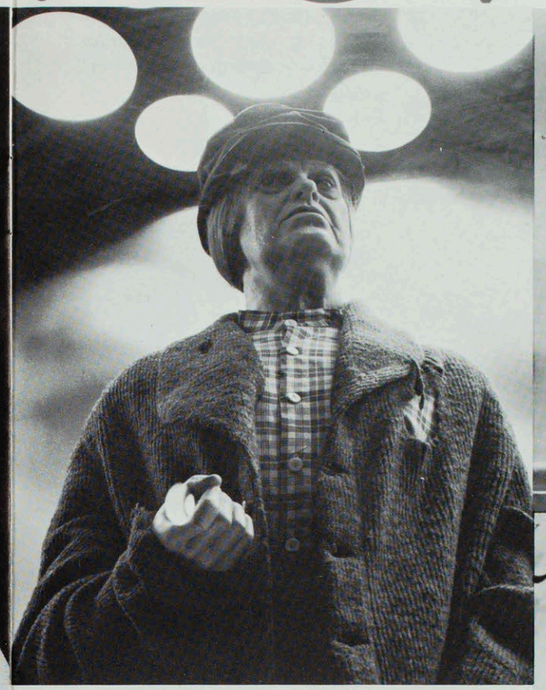
THE MOVIES

Props



Early moving lantern slide

Star and Pinion which moves the film through the camera



Costume worn by Marie Dressler in "Anna Christie"

Model of railroad station used for location shooting of "Ruggles of Red Gap" and "Pollyana"

A possible Walter Lantz cel

Among the most interesting of the thousands of entomological and botanical micro-fossils from the Upper Oligocene of the German Rhineland in the Museum's Georg Statz Collection are those of the tiny Eurasian water spider, **Argyroneta aquatica.** *Anthropologist Peter T. Furst, who has long been interested in the natural and cultural history of spiders and their role in the cosmology and symbolic arts of non-western peoples, took these photographs of a living descendant of the 40,000,000-year-old fossil spider in the course of his research into the mythology of spiders. His pictorial documentation of some of the extraordinary life habits of* **Argyroneta** *indicates little, if any, anatomical differences between the fossil and the live spider, despite the tens of millions of years which have elapsed since Oligocene times. In the accompanying article Dr. Furst, who also published the first description of the Statz Collection after its acquisition by the Museum in the early 1950's, describes nature's own aqualung diver in the context of some widely divergent human attitudes toward spiders in general.*

THE AQUALUNG SPIDER— BIRTH TO DEATH UNDER WATER

and Living Descendant of the 40,000,000-year-old Fossil Spider as well...

by **Peter T. Furst**

Spiders have been an endless source of fascination for man since long before written history. Contemporary western urban man often has an irrational horror of spiders, but non-western peoples, as well as those of classical antiquity, have endowed the spider with power and mystery, regarding it as friend and ally of man and gods, a creature at once useful, magical and precious.

Arachne, the Greek maiden who vied with Athene for the honor of being first among weavers and was changed into a spider for daring to challenge the gods; the sacred Spider Mother of the Hopi; Spider as the beneficent Bringer of Fire among the Cherokee; the West African Ashanti trickster-culture hero Anansi, the Spider, owner of folk tales, which he stole from the Sky God by trickery to give to the people and which, carried by slaves to the New World, came to enrich our folk literature as "Aunt Nancy stories;" the spider oracles common to many parts of the world; spider motifs in the ritual and symbolic arts of native peoples, ancient and modern; the thread of spider silk on which the heroes of "the first times" effected their escape from peril or descended to earth from the upper-world in many American Indian origin stories — these are but a few of innumerable instances of man's preoccupation with the spider world in all its fantastic multiplicity of form and habit.

To people better attuned to nature than we, not all spiders are automatically bad, nor, for that matter, all good — it depends on their attributes, real or ascribed. A poisonous spider like the "black widow" (*Latrodectus*) may be justly respected and feared for its highly toxic nature. But the Indians of the Southwest have long known, better than we, that the so-called tarantulas of North America are essentially harmless to man, though some are capable of inflicting a painful bite. The Hopi Spider Mother in her animal manifestation is in fact the trapdoor or purse-web spider, a close relative of the tarantula.

The origin of the name "tarantula" itself is interesting. It derives from the region of Taranto in southern Italy, where pagan Bacchanalian and Dionysian harvest and fertility ecstasies survived into Christian times thinly disguised as spider bite mania to fool the blackrobed priests of the new religion. The wily peasants claimed that people bitten by a certain spider ("tarantula") at harvest time could throw the deadly poison off only by means of unrestrained erotic dances ("tarantella") and that they would surely fall dead if anyone dressed in black were to appear to stop them. The priests, of course, wore black. According to the tradition one had to be bitten only once for the mania and

Well-preserved 40,000,000-year-old fossil of *Argyroneta*, the Eurasian water spider, from Upper Oligocene deposits in the German Rhineland. From the Georg Statz Collection in The Natural History Museum of Los Angeles County.

All photos by Peter T. Furst unless otherwise credited

Even the fine hairs on the legs of *Argyroneta* are beautifully preserved in this fossil specimen from the Statz Collection. Photo by Armando Solis.

the need for ecstatic dancing to return each year. The dancers were called "tarantati" — those bitten by the tarantula. Needless to say, wild dancing, or any kind of strenuous movement, would be the very last thing to do in case of a really poisonous bite, whether by a spider or a snake. There is no question that mass hysteria or ecstasy really occurred, but certainly not on account of a spider.

In any event, the worldwide list of spider symbolism of one kind or another is long and varied, as befits a class whose members range in size from pinhead to dinner plate, and in manner of catching their food from running the prey down like wolves to fishing for it like diving birds, snaring it in elaborately prepared traps like some Indian deer hunters, or even hurling a weighted line at it like the gauchos of Argentina.

Spiders are very ancient creatures. They were among the first land animals in the distant Paleozoic and some, like the hairy tarantula, have barely changed in form or habit in the hundreds of millions of years since. But like so-called primitive human hunting and collecting societies which still survive in parts of the world, the primitiveness of certain spiders is a mark not of backwardness but rather of enviable ecological success. They are so well-designed by evolution and so well-adapted to their environment that they had no need for radical change. This applies also to sharks and cockroaches, to mention but two of nature's most successful early forms.

The magnificent symmetrical cartwheel webs of the orb spiders have long served as symbols of natural beauty as well as industriousness. For the Dakota Sioux the orb web was the symbol of the universe itself, with the four anchor lines representing the four sacred cardinal points. Spiders employ their marvellous capacity to manufacture an almost limitless supply of "silk" within their bodies in a variety of ways — to travel enormous distances when very young, to protect their egg sacs, to make their homes above ground and below, and of course to trap their prey. Spiderlings have been known to "balloon" hundreds of miles across open sea from their place of birth, wafting through the air on invisible strands. As for spider nests, there are vertical shaft or slanting tunnel webs like those of the trapdoor spiders, closed off with ingenious, well-camouflaged hinged doors which could have served as a natural prototype for the earliest hinged doors in human habitations; funnel webs like that of the common *Agelena,* the so-called grass spider; sheet webs like the tarantula's as well as other less impressive species; long slender tube webs with radiating outside lines like those constructed by the primitive six-eyed hunting spider called *Ariadna;* the black widow's aesthetically unappealing but highly effective tangled webs, and many others. All are spun of a complex albuminoid protein which hardens upon exposure to air, as fine as one-millionth of an inch in some species and in others twenty times as thick and yet so fine and of such strength that it can hardly be duplicated even by the most modern technical means.

In many respects the most fascinating of all is a small dun-colored Eurasian spider called *Argyroneta. Argyroneta* is nothing much to look at, either in terms of size, distinguishing charac-

Out of water, *Argyroneta aquatica,* the Eurasian water spider, is a drab, dun-colored little creature, barely half an inch in length.

Argyroneta spins a fine line of silk from her spinnerets and lowers herself headfirst into the water where she spends most of her life, from birth to death.

teristics, or color pattern. However, this unprepossessing little creature has a lifeway shared by no other member of the Araneida: alone among spiders she spends virtually her entire life from birth to death under water. There are some other spiders which can run about on top of the water or even dive briefly to catch their prey, but *Argyroneta* is the only one able to live and swim freely under water for long periods of time. She builds her nest under water, and like herself, her almost microscopic offspring are endowed from birth with this same remarkable adaptation to an aquatic environment.

Yet *Argyroneta* boasts no special equipment for this feat. She is built exactly like other spiders — a land creature dependent upon breathing oxygen from the air for survival. It is simply that at some time in the distant past her terrestrial ancestor returned to the water, the primordial birthplace of all life on earth.

Of course, whales and seals have also done this, but over time these and other aquatic mammals developed specialized appendages for swimming, although, like *Argyroneta,* they retained their terrestrial lungs. But *Argyroneta* has not been modified in any way by evolution. She has neither specialized appendages nor organs which would enable her to take oxygen directly from the water. Rather, she brings her aerial environment with her when she goes beneath the surface, replenishing the supply of life-giving oxygen from time to time as she exhausts it. In this sense, of course, her behavior more nearly approximates that of the aqualung diver than that of lower mammals which have returned to the sea.

Willis J. Gertsch of the American Museum of Natural History, a leading student of American spiders, is positively lyrical about *Argyroneta* (which does not naturally occur in the New World):

"Severely plain when outside the water," he writes in his classic work, "American Spiders" (1949), "once *Argyroneta* dives she becomes a shiny, silvery bubble, transformed from a drab gnome into 'an elfin fresh from fairyland.' "

This description and the Statz fossils in the Los Angeles County Museum of Natural History made me curious and I ordered some live specimens from a natural science supply house in England on the recommendation of Dr. Fred Truxal, then Curator of Entomology and now Chief Curator of Life Sciences of the Museum. It was Dr. Truxal who first introduced me to the world of spiders in the early 1950's by presenting me with a live tarantula. *Argyroneta* arrived by air, packed securely in wet moss, probably to the mystification of U. S. Customs. Placed in a small aquarium she proved at once that Gertsch had not exaggerated: hugging a silvery air bubble to her abdomen as she dove beneath the surface she was indeed instantly transformed. She lost no time choosing a suitable spot amid the water plants to build a nest — a tightly woven silken sheet anchored to the surrounding flora into which she released bubble after bubble of air carried down from the surface, until the silk billowed upward and outward to form a kind of miniature diving bell. Over time, as the oxygen became used up, she would return to the surface to capture more air with which to replenish her

left
Curious fish approach as she hangs head-down just below the surface.

right
Suddenly she dives, pulling down a bubble of air which envelops her abdomen, including her breathing organs. Hundreds of tiny silvery air bubbles cling to the fine hairs on her legs.

underwater supply.

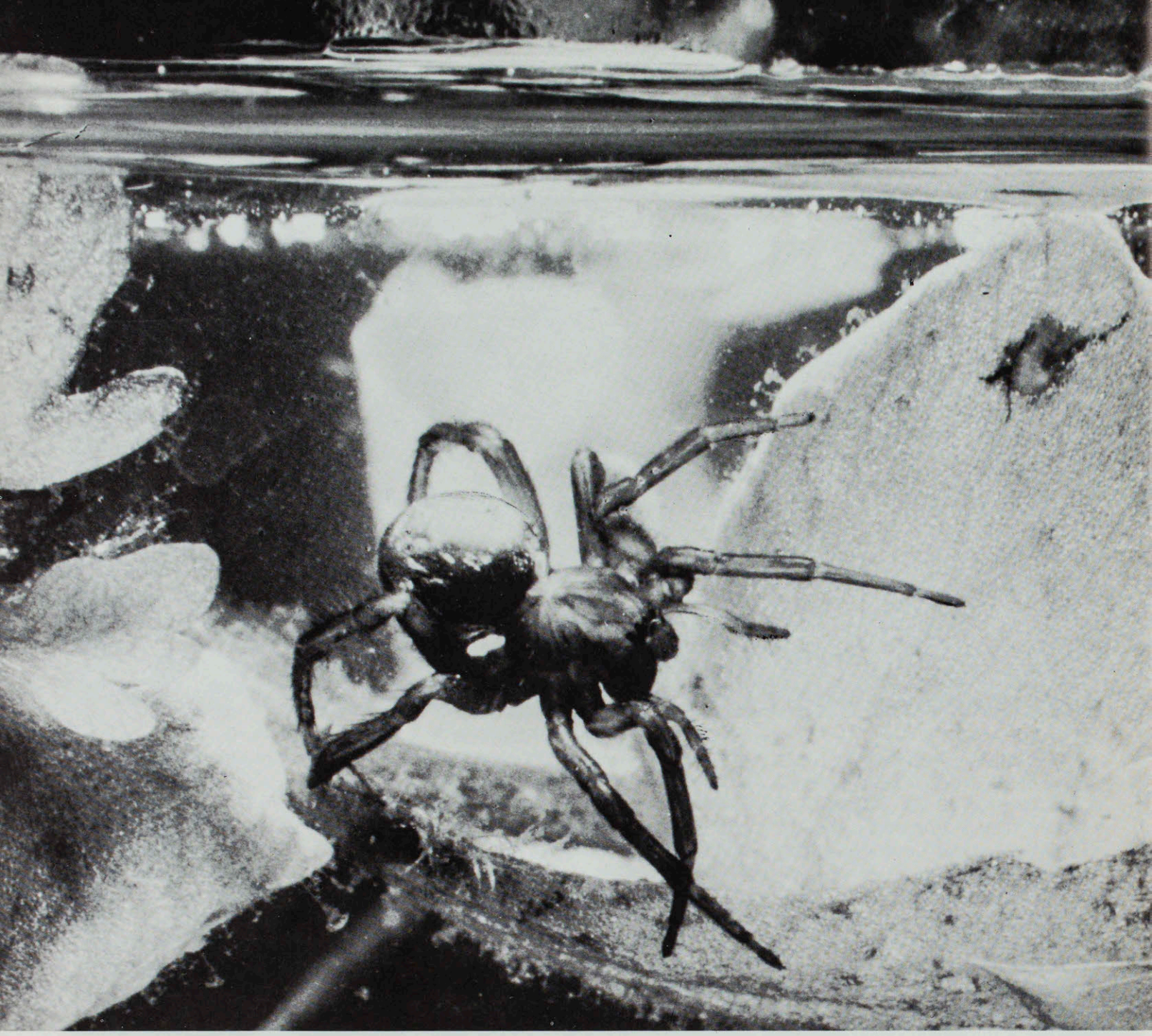
Under natural conditions, *Argyroneta* prefers ponds and quiet streams as her habitat. Most of the day she spends in her nest, from which she ventures forth at night to hunt for small aquatic life. Feeding, molting (like crabs and lobsters, spiders shed their outer skin as they grow), mating, egg-laying and hatching are all done within the bubble. In contrast to many other species of spider, whose smaller males are often eaten by the larger females, the male *Argyroneta* is normally larger than his bride, which Gertsch suggests is just as well "for the satisfactory conclusion of his suit," because during courtship the male either constructs his diving bell close to the female's and joins the two by a tunnel or else swims directly into her bell and shares her nest.

The eggs hatch in about three weeks. The baby spiders remain for a time in the lower part of the bell with their mother and then depart, swimming expertly through the water to search for a suitable spot to build their own tiny replicas of their mother's shiny bubble home.

At the onset of cold weather *Argyroneta* becomes inactive. She leaves her diving bell amid the water plants and moves to deeper reaches, to lie virtually dormant all winter in a durable home which she constructs in a sheltered place, such as an empty snail shell or a cavity in a rock. In this way she is able to survive on a single supply of oxygen, until the breakup of the surface ice permits her once again to fill a new nest with shiny bubbles of fresh air.

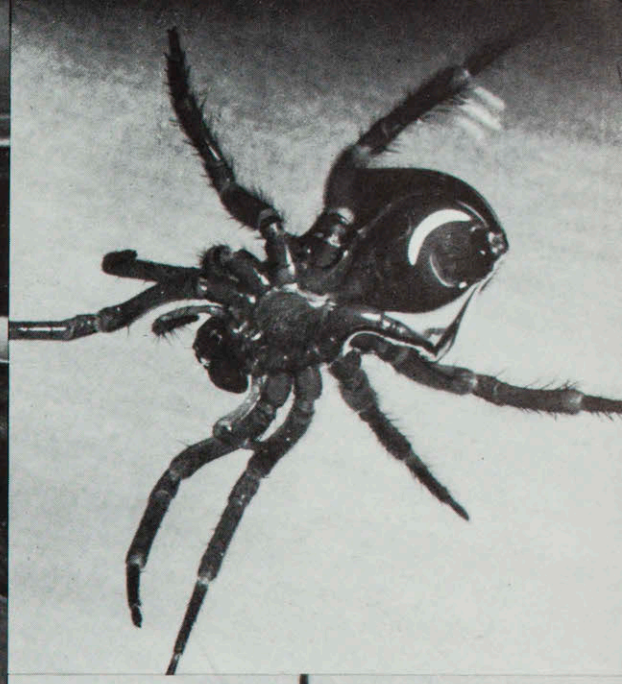
My own English *Argyroneta* failed to mate and after a few months they died — a loss keenly felt by one who enjoyed their quicksilver antics. Perhaps it was just as well. The tiny creature seems harmless enough, but the ecological consequences of introducing a new species into the environment are always unpredictable, and potentially fraught with as much risk as eliminating a long-established one.

Dr. Peter T. Furst is Associate Director and Research Anthropologist, Latin American Center, U.C.L.A. The author of numerous books and articles in diverse fields, Dr. Furst has another book forthcoming on Pre-Columbian Art to be published by Praeger.



Under water, *Argyroneta* changes from a drab little sluggish creature into a swiftly moving, silvery swimmer, often as agile as the water creatures for which she goes fishing.

Completed underwater home of *Argyroneta* with female spider inside. The nest is a tightly woven silken sheet held in place among aquatic plants and filled with air which the spider brought down from the surface in repeated dives. Stale air is released through holes which the little spider cuts in the top of the sheet and then reseals with fresh silk. Air supply is replenished with new bubbles as oxygen is exhausted.



above
Displaying her underside, *Argyroneta* shows how her air bubble is held to her abdomen and her breathing apparatus. When bubble is exhausted, she returns to the top and replenishes her air supply. If she does not move about, she can stay under water for as long as 16 hours without coming up for air; in the cold season she remains inert in her diving bell home for months at a time.

below
Like a silvery bubble, little *Argyroneta* paddles about in search of likely food. An excellent swimmer, she does most of her hunting at night, like many of her terrestrial sisters.

Hunting is normally done at night. *Argyroneta* lives on small water life and occasionally even manages to catch a fish. Prey is taken into the diving bell to be digested.

Male of species builds smaller diving bell nest close to female's and when mating time approaches connects it to her's by a tunnel. Sometimes the male will actually move in with the female and share her home. In many species the male is much smaller than the female and sometimes is devoured by her after mating; the male *Argyroneta* is usually larger than his bride and so manages to avoid such a tragic end.

continued from page 5

size of our exhibit staff; our contribution to teaching at the wholesale level — teaching future university teachers — now in high gear through close association with our valued academic friends across the street in the University of Southern California and elsewhere. Our educational retail business, that of grade-school kids, is really booming — thanks to many of you here. There may be some of you who are not a part of that effort and have not seen the action. I would suggest that you start by visiting our front porch some school-day morning. There, with the precision of a military maneuver, the friendliness of a St. Bernard, and the knowledge of a Cuvier or a Louis Agassiz the indispensable Docents of this Museum begin their sessions with the visiting classes that pass through our doors at the rate, I am told, of up to 13 classes per hour. And I have sometimes eavesdropped on our Docents as they talk to these groups in the galleries. I can only say that I have heard many talks less informative, and a great many more boring, during my ten year stay at Harvard.

These are a few of your many accomplishments — monuments to what spirit can do even when funds are tight.

I arrived too late to witness firsthand the full impact of Mr. Belous' Black Heritage exhibit, but that impact continues at least in the form of correspondence still being addressed to the Museum. Much of it expresses the hope that that exhibit could be made a permanent one. That exhibit is to me a timely and very provocative experiment. We have been urged by the revolutionary new left to ignore history and the past; to dismantle the present and then to build from the wreckage, through means undisclosed, a new and innovative future. They assure us that this philosophy is wide-spread, and that history is both irrelevant and uninteresting to the new public. Yet the cultural history of a part of the Los Angeles population was intelligently displayed in these halls and that exhibit drew adult visitors by the tens of thousands. Who now can say that the public cares not about the past — its accomplishments, failures, features and its lessons? And given that experiment in historical presentation — the Black Heritage exhibit — perhaps we should think further about the impact, social as well as educational, that a first-class hall of history and culture, with special reference to the southwest, would have on our community.

That history in the narrower sense — the development of man and his institutions — is an integral part of natural history has been evident to the thoughtful for a very long time, although much longer in some cultures than in ours. Man has evolved and developed through time within, and dependent upon, an ecosystem resilient enough to absorb or to compensate for the workings of this singular species. The more farsighted have long understood this relationship — and have understood that man should stand as the trustee of his environment rather than simply as its exploiter. The relationship is aptly stated in a line appropriately carved, over a half century ago, into the marble walls of the American Museum of Natural History in New York:

> "The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased and not impaired in value."

But by and large the nation has not behaved as well as it should. Our little world is becoming one in which environmental resilience is being pushed to the limit; yet the dependence of man on this environment, irreversibly established through eons of interdependent evolutionary change, remains. Teddy Roosevelt's words on the walls of the American Museum speak of national behavior. We are now talking of the conditions and terms of national survival.

With the advent of this environmental crisis, true museums of natural history such as this one assume a new practical importance. Our Museum is, of course, the focal point for those who care about the natural world. It houses the material that can be called forth to explain this natural world — its concepts as well as the tangible evidence — to the young and other uninformed. Through it the complacent can be aroused. And, through its intelligent and informed staff, it is in a position to discredit the harpings of the uninformed extremists on the one hand, and, on the other, of the vocal and unrealistic if not immoral few who would use the vital issues of environmental deterioration as their tools of revolutionary social change.

The scientists on the staff of this Museum, although few in number, are highly trained systematists and ecologists schooled in the analysis of the facts of environmental and evolutionary biology. They cannot of course solve all of our problems but they are uniquely equipped, through their understanding of biological phenomena, to keep the search for a solution on the right track. They also have an extra ace in their hands — one which you have given to them. They draw for their facts not exclusively on a library of secondary sources or the written opinions of others, but on a source of unequivocal facts. That "library" is the research collections of plants, animals and minerals housed in this Museum.

As a guide to what the southern California environment and biota can again be we can best use a knowledge of what it once was, and what it now is in comparison with areas less ecologically troubled. There is only one way, through which such a knowledge can be gained — through the study of the research collections of plants and animals of this Museum. These collections, and those who study and report on them, can no longer be regarded simply as desirable but perhaps questionably relevant scientific luxuries. They are as essential to the ecological understanding needed for environmental restoration as is environmental restoration itself to the quality of man's continued existence in the Los Angeles Basin.

This Museum has an obligation to our citizens. It is here to display the treasures of nature and of man's past. Its collections are here to illustrate concept of importance and, through research, to contribute to the development of new concepts and thus to a better future. It has not grown apace with the explosive growth of our human population; nor has it been able to adequately expand into areas of immense and immediate environmental and cultural concern. It must do so, for a full public understanding of man, the natural world, and the dynamic relationships among all the pieces is our best insurance for a more enlightened and intelligent future.

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